

A new way of recycling lead batteries in Norway

F. Hagen

AS Batteriretur, Postboks 97, 1740 Borgenhaugen, Norway

Received 10 August 1998

Abstract

The basic structure of a national programme for collection and recycling of discarded lead batteries, is based on the principle of producer's responsibility. The paper describes the interaction between government and industry and legislation in support of the programme. © 1999 Elsevier Science S.A. All rights reserved.

Keywords: Targets; Ownership; Competition; Geography; Finance; Regulations

1. What is AS Batteriretur?

1.1. Historical facts

In 1993, a voluntary agreement was reached between the Norwegian lead battery industry and the Norwegian Ministry of Environment to establish an industry-organised recycling program for lead batteries.

The same year, AS Batteriretur was established in order to take care of the entire lead battery industry's responsibility for the management of waste from the product they introduce to the market, as well as to manage a nationwide recycling system for used lead batteries in Norway.

Our business concept has proved capable so far, and we would like to highlight some of the key factors.

1.2. Goals

- A nationwide recycling program which ensures that at least 95% of discarded lead batteries in Norway are recovered.
- To measure the percentage of recovered batteries.
- To be responsible for the administration of the recycling system, including collection, recovering, trade and financing.
- Nonprofit status means no dividend is paid to owners. Profit is kept as reserves for future fluctuations in the lead price.
- In order to ensure a sustainable recycling arrangement, both economic and environmental management principles are used.

1.3. Ownership

AS Batteriretur is owned by the lead battery manufacturers and importers, and has formed alliance with automobile and motorcycle importers, and motor equipment importers.

2. Initial challenges and their solutions

2.1. Geography

Norway is, with its 4.5 million inhabitants, a small country. However, there is a special logistics challenge. Our country is extremely long and narrow; the distance from Kristiansand in the south to Kirkenes in the north is longer than from Kristiansand to Rome. Norway is well-known for its mountains and fjords, but they also add to the already considerable distances.

This challenge has been met by requiring the 10,000 battery retailers to function as reception points for discarded lead batteries, along with scrap dealers and municipal refuse dumps. This ensures that the consumer always has easy access to lead battery disposal.

2.2. Logistics

The receiving points stock the batteries in specially designed bins to ensure that the lead batteries do not cause pollution, or harm to people or animals. From these bins, undamaged batteries are loaded on to euro pallets, covered with plastfoil and transported to storage depots. This meets

the regulatory requirement for undamaged batteries, and that covers more than 95% of the collected amount. As for the remaining, less than 5%, AS Batteriretur has developed another bin that satisfies the relevant requirements for damaged lead batteries. Naturally, both these bins are completely recoverable.

The advantage of this simple system is that 95% of the waste can be transported cost efficiently on regular carriers, under ordinary quality inspection routines, just like any ordinary commodity.

There are two central storage depots in Norway, both in the southern part of the country. From here, all the batteries are brought to recovery plants in Sweden and in England. The main function of the central storage depots is quality control of the cargo before it is exported.

2.3. Finance, cost efficiency, and competition

AS Batteriretur reports updated lists of participating importers to the Norwegian customs service, who collects the battery levy on the import. The producers pay levy on their production, minus export. The importer and producer pass the levy on to their retailers and finally to the end user, the customer. Levy is paid for batteries and for cars, and motorcycles.

Generally speaking, the consumer pays a fee of NOK 20, to the battery dealer when buying a new battery. This is equal to about £1.70 or US\$2.80, which the consumer pays in order not to have to bother about waste problems; old lead batteries may be returned free of charge any time, and to anyone of the 10,000 collection points.

One of the tools to make this arrangement cost-effective, is to ensure the participation of as many parties as possible. The battery dealers are required by law to have a system for recycling lead batteries. They are offered the opportunity to use the system developed by AS Batteriretur free of charge. As already mentioned, households can deliver their used batteries free of charge to any collection point. In our experience, private households and business consider used batteries as an environmental problem, and they are comfortable with delivering them to the collection points.

Lead prices quoted on LME determine what smelters are willing to pay for the used lead batteries, which in turn makes up the main part of AS Batteriretur's income along with the fee. Low transportation and collection costs are essential.

To avoid the risk for distortion of competition, the importers and producers directly own and control the program under statutes that neutralise the influence of each company or group of companies. AS Batteriretur functions as a national purchase office for scrap lead batteries, trading under the same commercial conditions that apply to any company licensed to collect scrap batteries. It is in all aspects a voluntary program. Success is strictly based on the performance of the program.

The income mix of import levy and sales revenues has so far enabled the program to accumulate financial reserves. This neutralises the short-term impact of LME-fluctuations on the battery collection. For the smelter this is beneficial as the arrangement produces a steady flow of material, regardless of LME-quotations. Obviously this is a key factor for the smelters.

3. Regulations

3.1. International regulations

Batteries are regulated as both commodity and waste. The European Union's 'Battery Directive' has been in force for quite a few years, and the scope of this directive will probably be expanded in the coming years, in addition to the 'Hazardous Waste Regulations' related to scrap batteries. It is a challenge for the battery business to find ways to successfully integrate the 'Battery Directive' and the 'Hazardous Waste Regulations' in their daily business. The Norwegian recycling program for lead acid batteries may be one step in the right direction.

3.2. National regulations

In 1990, the Ministry of Environment introduced the 'Regulations relating to Environmentally Harmful Batteries' (hereafter called 'The Battery Regulations'), a national regulation roughly equivalent to the European Union's 'Battery Directive'. The regulations controlling the labelling of environmentally harmful batteries, prohibits the production, import, export and sale of certain types of batteries, and require dealers to accept scrap batteries for which labelling is mandatory. The regulations also regulate the deposit, collection and delivery of lead batteries to recycling or waste treatment.

The Battery Regulations are divided into 15 sections.

1. Scope of the regulations
2. Definitions
3. Labelling of environmentally harmful batteries
4. Prohibition against certain types of batteries
5. Obligation to accept scrap return batteries subject to labelling
6. Obligation to deliver lead batteries
7. Obligation to collect and deliver lead batteries to recycling or waste treatment
8. Reporting requirements for lead batteries
9. Duty to provide information
10. Supervision
11. Exemptions
12. Complaints
13. Coercive fine or pollution fee
14. Penalties
15. Entry into force and transitional provisions

Below are the constraints of the Battery Regulations.

- Lead battery dealers are under obligation to accept the return of lead batteries free of charge from households and enterprises, limited to the category of batteries sold by the dealer. For enterprises, the dealer's obligations are limited to a 'reasonable quantity' of batteries sold by the dealer, which must be evaluated in relation to the dealer's average annual turnover of lead batteries. The obligation to accept scrap return batteries is not linked to the individual batteries the dealer has sold or to certain brands of batteries, but applies to batteries subject to labelling in general.

- Manufacturers and importers of lead batteries are under obligation to ensure the collection and delivery to recycling or environmentally proper waste treatment of at least 95% of the quantity and categories of lead batteries they bring into the Norwegian market. Quantity means the number of tons of batteries. These regulations also contain the method for calculating the collection percentage.

- The obligations pursuant to the last paragraph may be fulfilled by a third party (e.g., AS Batteriretur).

- Manufacturers and importers shall report annually on the production, import, export, collection and delivery to recycling or environmentally proper waste treatment of lead batteries to the pollution control authorities. The reporting obligation may be fulfilled by a third party (e.g., AS Batteriretur) and is intended to give the pollution control authorities an overview of how many lead batteries are collected and delivered to recycling or environmentally appropriate waste treatment. Reporting that discloses violation of the regulations may form the basis for specified sanctions.

3.3. Traceability of hazardous waste

A significant part of Norwegian waste politics is that all hazardous waste should be traceable. To meet this require-

ment, the authorities run a central database for tracing all types of hazardous waste.

On behalf of all the lead battery importers taking part in this recycling programme, AS Batteriretur runs a database with specifications set up by the authorities. This database is linked to the central one. Through this database any quantity of waste batteries can be tracked from any of the 10,000 reception points to the point of confirmed recycling. None of the participants in this recycling program have direct access to the database, except for AS Batteriretur and the authorities.

Reports on the amount of collected batteries are never made for single companies, always for an entire municipality, countywide or nationwide.

4. Summary

The Norwegian lead battery recycling program has in our opinion been able to cope for the following reasons.

- The program is organised as a nationwide recycling program for lead batteries, and functions as a national purchasing office for discarded lead batteries.

- AS Batteriretur is owned and controlled by the manufacturers and importers of lead batteries who supervise that no distortion of competition occurs.

- Regulations made by the national authorities correspond to EU regulations.

- The National Battery Regulations impose the same constraints on all importers and producers, the program is an offer of an easy way out for them.

- The system is cost-effective, practical, and fully transparent for the participants.

- The program meets the smelters demand for a steady flow of material regardless of the LME quotation.